The impact of body condition in pregnant beef cows for calf welfare and lifetime productivity

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The impact of body condition in pregnant beef cows for calf welfare and lifetime productivity[1]

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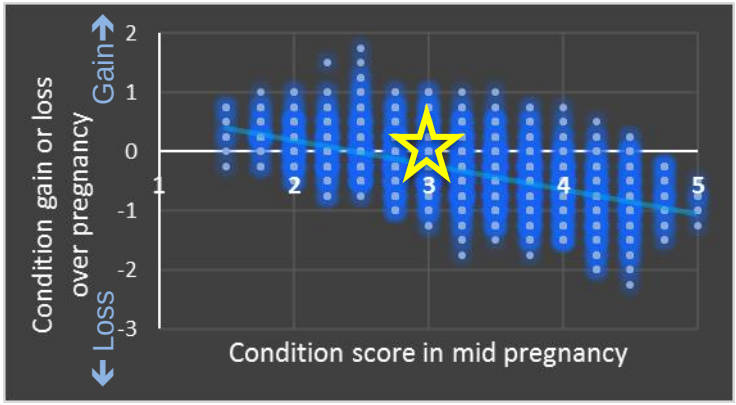
Key message: Large variation exists within and between Scottish beef farms in the management of body condition in pregnant suckler cows. Improved management of body condition could reduce feed use and associated costs and improve calf vigour, size and long-term growth rate.

Main Findings

- Body condition scoring is a rapid way to assess fat coverage of livestock. In cattle it is scored on a 1 (lean) to 5 (obese) scale.
- Scottish beef cows typically gain body condition when grazing during the summer and are allowed to lose some of this condition during the winter before calving in the spring.
- Previous Scottish Government funded work at SRUC suggested that only a minority (~4%) of farmers used the recommended condition scoring approach.
- The effects of maternal body condition for the calf have been poorly studied. We condition scored 2366 cows on 21 beef farms twice during pregnancy and followed the development of their calves.
- Our results indicate that:
  - There is large variation within and between farms in condition scores and in condition change over time.
  - The existing recommended target is for cows to be at a score of approximately 3.0 in early-mid pregnancy and to calve at score 2.5. Only 41% of cows were within +/- 0.5 condition points of these targets. Cows showed wide variation in condition gain and loss over pregnancy (see graph; the recommended scores are marked by a yellow star).



  - Cows that were 'lean' (more than 0.5 condition points below target) in mid pregnancy had calves that were 7% more vigorous at birth than calves of other cows. However, those that were lean in late pregnancy had calves that were 7% less vigorous.
  - Cows that lost more than 0.5 condition points between mid and late pregnancy had calves that were 5% smaller at birth than cows that stayed within 0.5 points, and 13% smaller than cows that gained more than 0.5 points.
  - Calf weight gain to weaning was around 1.5% better if their mother had stayed within 0.5 condition points between mid and late pregnancy as compared to gaining or losing condition.
  - The results indicate that obesity during the earlier stages of pregnancy is likely to be damaging, particularly if followed by substantial condition loss as pregnancy progresses.

[1] This research was undertaken within the Scottish Government Rural Affairs and the Environment Portfolio Strategic Research Programme 2016-2021, Productive and Sustainable Land Management and Rural Economies Theme. For more information please see: Strategic Research Programme | SEFARI.
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- There is much scope to better manage body condition. Calf viability and growth are improved by a moderate condition score and avoiding large swings in condition over time.

Introduction

- Many beef farms lack facilities to weigh cattle and condition scoring gives a way to assess the suitability of feed provision.
- The recommended approach is to condition score using the hands to palpate fat depth on restrained animals. It takes 10-20 seconds per cow when handled for other routine procedures.
- The majority of Scottish beef cows are pregnant over the winter before calving in the following spring. Provision of feed over the winter is costly and excessive body condition at calving is known to be a risk for calving difficulties. Therefore, management routines usually allow cows to lose condition when pregnant.
- Much research has shown that maternal stress can affect pre- and post-natal development but it was unknown whether body condition loss could harm calf welfare and growth. This was the first study to examine the effect of cow body condition and its change over pregnancy on calf development.

Methods

Cows were condition scored on 38 farms of which 2366 cows from 21 farms had calf outcome data suitable for analysis. These farms were primarily located in Scotland with a minority in northern England. They ranged in size from 36 to 348 cows and represented the distribution of breeds within Scotland. Analyses accounted for effects of breed, cow age, calf sex, farm, scorer and stage of pregnancy. Cows were condition scored as they were moved from grazing to housing in the autumn of 2016, corresponding to mid pregnancy, and again in early spring 2017, corresponding to late pregnancy. Condition scoring was performed hands-on by trained observers and recorded on the conventional 1-5 scale using quarter point increments. All available data were collated on the calving event (calf size, vigour, need for assistance), calf growth rate at three phases covering the period from birth to slaughter, and calf carcass grade. Calf size, vigour and growth rate showed wide variation and were suitable for robust analysis. Requirement for assistance at calving and carcass grade showed little variability and no effects of cow condition score were found. The dataset is, to our knowledge, the largest ever created on beef cow condition. It should be noted that the condition score distribution varies annually depending on the weather and quality of the grazing season but the biological effects reported above remain relevant.

Policy Implications

There is considerable scope to more closely manage body condition in pregnant suckler cows. Avoiding obesity, excessive leanness or large changes in condition over pregnancy can avoid unnecessary winter feed use and lead to more vigorous calves that grow faster for many months after birth. Effort is required to encourage adoption of the long-established method of condition scoring. This requires minimal time, no additional equipment and little training and can be performed during routine handling. Lean and overweight cows should be managed in different groups to match feed provision to their body condition. Frequent movement of cows between groups will cause stress so they should be allocated to management groups according to their condition in early pregnancy and remain in the group thereafter.

For more information on the work of SRUC's Rural Policy Centre, please contact the team on:

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